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EXAMINER

DATE JANIS I

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 10/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/692,389

Applicant(s)

JUBRAN ET AL.

Examiner

Janis L. Dote

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 15-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 23-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-26 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/2/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-14 and 23-26, drawn to (a) organophoto-receptors, (b) electrophotographic imaging apparatuses, and (c) organic compounds, classified in class 430, subclass 74, class 399, subclass 159, and class 549, subclass 551, respectively.
- II. Claims 15-22, drawn to imaging forming methods, classified in class 430, subclass 117.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions Ia (organophotoreceptor) and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the product as claimed can be used in a materially different process, such as an imaging process comprising the steps of developing an electrostatic latent image formed on the organophotoreceptor of Invention Ia with a toner and fixing the

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toner image onto the surface of the organophotoreceptor. Such a process does not require transferring the toned image to another substrate as recited in the process of Invention II.

Inventions II and Ib (apparatus) are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process of Invention II can be practiced by hand.

Inventions Ic (compound) and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different functions and different effects. Invention II is drawn to a process that comprises the steps of charging and imagewise exposing an organophotoreceptor to form a charge pattern, developing the charge pattern with a toner to form a toner image, and transferring the toner image to a substrate. Invention Ic (compound) is drawn to a compound, which can be used in compositions other than an

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organophotoreceptor, such as a charge transport material in an electroluminescence device.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, and as shown by their different classification, restriction for examination purposes as indicated is proper.

3. During a telephone conversation with Mr. Kam Law (Reg. No. 44,205) on Oct. 19, 2004, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-14 and 23-26. Affirmation of this election must be made by applicants in replying to this Office action. Claims 15-22 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicants are reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

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5. The abstract of the disclosure is objected to because it is not limited to a single paragraph. Correction is required. See MPEP § 608.01(b).

Applicants are reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

6. The disclosure is objected to because of the following informalities:

The use of trademarks, e.g., Melinar [sic: MELINAR] at page 10, line 25, has been noted in this application. The trademarks should be capitalized wherever they appear and be accompanied by the generic terminology. This example is not exhaustive. Applicants should review the entire specification for compliance.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Appropriate correction is required.

7. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

(1) In instant claims 2, 9, and 24, the recitation "X is a OCH₂ group" lacks antecedent basis in the specification. The only disclosure is at page 20 of the specification, which shows two particular compounds where X is -OCH₂-. The recitations in claims 2, 9, and 24 are broader than the two disclosed particular compounds, where the R groups are respectively phenyl or tolyl groups, and Y is a 1,2,4-trisubstituted benzene, because they include compounds that are not the two particular compounds, such as compounds where the R groups are alkyl groups.

(2) In instant claims 3, 10, and 25, the recitation "R₁, R₂, R₃, and R₄ are independently, an aryl group" lacks antecedent

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basis in the specification. See page 20 of the specification, which shows two particular compounds where the R_1 , R_2 , R_3 , and R_4 in one compound are all phenyl or in the other compound are all tolyl. The recitations in claims 3, 10, and 25 are broader than the two disclosed particular compounds, where the Y is a 1,2,4-trisubstituted benzene, because they include compounds that are not the two particular compounds, such as compounds where the Y group is a tri-substituted alkane group, and R_1 , R_2 , R_3 , and R_4 are either phenyl or biphenyl.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-14 and 23-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 8, and 23 are indefinite in the phrase "Y is an alkyl group, alkaryl group, or aryl group," because it is not clear what is the definition of Y. In the formulas recited in those claims, Y is bonded to three different groups, i.e., is

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trivalent. The terms alkyl, alkaryl and aryl are usually defined as monovalent groups. See, for example, Grant & Hackh's Chemical Dictionary, 5th edition, page 24, where the term "alkyl" is defined as C_nH_{2n+1} , a "monovalent radical derived from an aliphatic hydrocarbon by removal of 1 H" (emphasis added).

Claims 4, 11, and 26 are indefinite in the phrase "selected from the group consisting of the following . . . " because the phrase is missing the conjunction "and." Proper Markush language would be "R is selected from the group consisting of . . . and . . . " MPEP 2173.05(h). It is not clear whether the grouping is closed.

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the

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art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f), or (g) prior art under 35 U.S.C. 103(a).

13. Claims 23 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,693,309 (Deutsch), as evidenced by CAPLUS abstract AN 1997:772242, DN 128:70000, describing US 5,693,309, which discloses the file registry number 121327-42-2, and Grant & Hackh's Chemical Dictionary, 5th edition, page 558.

Deutsch discloses the compound 3,6-diaza-3,6,-bis(tert-butoxycarbonylmethyl)-4-(4-oxiranylmethoxy)benzylsuberic acid bis(tert-butyl) ester. Col. 46, example 31. Suberic acid is defined as $(CH_2)_6(COOH)_2$. See Grant & Hackh's Chemical Dictionary, 5th edition, page 558. The compound in example 31 is represented by the chemical formula (I) at col. 2, where the integers n and m are zero, X is tert-butyl, R_1 is oxiranylmethoxybenzyl, and R_2 is H. See also the chemical structure of

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the ACS File Reg. No. 121327-42-2 in the CAPLUS abstract, which is representative of the compound in example 31.

The compound in example 31 is within the compositional limitations of the formula recited in the instant claims. The compound is represented by the formula recited in instant claim 23, when X is $\text{-OCH}_2\text{-}$, E is oxiranyl, Y is the "alkaryl group," $\text{-(C}_6\text{H}_4\text{)-CH}_2\text{-CH-CH}_2\text{-}$, and the R groups are each the "alkyl group," $\text{-CH}_2\text{-COO(tert-butyl)}$. The instant specification at page 9, lines 5-7, discloses that the term "'group' indicates that the generically recited chemical moiety (e.g., alkyl . . .) may have any substituent thereon which is consistent with the bond structure of that group. For example, when the term 'alkyl group', such as methyl, ethyl . . . but also substituents such as hydroxyethyl . . . and the like." Thus, the term "alkyl" group appears to read on "alkyl" groups substituted by any functional group.

14. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,416,915 B1 (Kikuchi).

Kikuchi discloses the compound 102 at cols. 39-40. The compound 102 comprises three chain-polymerization groups -O-C(O)-CH=CH_2 . Kikuchi teaches that the chain-polymerization functional groups can equally be the chain-polymerization

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functional group $-\text{CH}_2\text{OCH}_2-\overset{\text{O}}{\text{CH}}-\text{CH}_2$. Col. 6, line 16, and compound 29 at cols. 19-20. Kikuchi discloses that said hole transporting compound comprising at least two chain polymerization functional groups, i.e., compound 29 or compound 102, forms a polymerizate. Accordingly to Kikuchi, when a surface layer in an electrophotographic photoreceptor comprises said polymerizate, the photoreceptor has high film strength leading to improved anti-abrasion and anti-scar characteristics. Col. 2, lines 52-56, and col. 3, lines 5-23.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Kikuchi, to substitute the three chain polymerization functional groups $-\text{O}-\text{C}(\text{O})-\text{CH}=\text{CH}_2$ in the Kikuchi compound 102 with the equivalent chain polymerization functional groups $-\text{CH}_2\text{OCH}_2-\overset{\text{O}}{\text{CH}}-\text{CH}_2$, because that person would have had a reasonable expectation of successfully obtaining a hole transporting compound comprising at least two chain polymerization function groups that is capable of forming a polymerizate which when used in the surface of an electrophotographic photoreceptor improves the anti-abrasion and anti-scar characteristics of the photoreceptor.

The resulting hole transporting compound comprising at least two chain polymerization function groups that is rendered obvious over the teachings of Kikuchi meets the compositional

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limitations of the formula recited in instant claims 23-25. The compound is represented by the formula recited in instant claim 23, when X is $-\text{OCH}_2-$, E is oxiranyl, Y is the "alkaryl group," $-(\text{C}_6\text{H}_4)-\text{C}(\text{CH}_3)(\text{CH}_2-)(\text{C}_6\text{H}_4)-$, and the R_1 and R_4 are phenyl and R_2 and R_3 are the "aryl group," $-\text{C}_6\text{H}_4-\text{CH}_2\text{O}-\text{CH}_2-\text{CH}-\text{CH}_2$. The instant specification at page 9, lines 5-7, discloses that the term "'group' indicates that the generically recited chemical moiety (e.g., alkyl, aryl . . .) may have any substituent thereon which is consistent with the bond structure of that group. For example, when the term 'alkyl group', such as methyl, ethyl . . . but also substituents such as hydroxyethyl . . . and the like." Thus, the term "aryl" group appears to read on "aryl" groups substituted by any functional group.

15. Claims 1-14 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Claim 26 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The prior art of record does not teach or suggest an organophotoreceptor comprising the charge transport material as

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recited in the instant claims 1-14. Nor does the prior art teach or suggest the compounds recited in instant claim 26.

Deutsch discloses a compound that meets the compositional limitations of the formula recited in instant claims 1, 2, 8, and 9. See paragraph 13, supra. However, Deutsch does not disclose or suggest that said compound be used as a charge transport compound in an organophotoreceptor. Rather, Deutsch teaches that the compound can be reacted to form a gadolinium complex for use in nuclear-medicine diagnostics. Col. 3, lines 17-42, and example 31 at cols. 46-47. Nor does Deutsch teach or suggest the compounds recited instant claim 26.

Kikuchi renders obvious a compound that meets the compositional limitations of the formula recited in instant claims 1-3 and 8-10. See paragraph 14, supra. However, as discussed in paragraph 15 above, Kikuchi discloses a surface layer comprising the polymerizate of said compound. Thus, the resulting polymerizate in the photoreceptor would not comprise the compound of the formula recited in the instant claims. Nor does Kikuchi teach or suggest the compounds recited in instant claim 26.

US 6,768,010 B1 (Tokarski) discloses organophotoreceptors comprising the charge transport compounds represented by the formula disclosed at col. 2, lines 8-28. See the two particular

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compounds disclosed at col. 14, lines 1-25. The compound disclosed by Tokarski comprises the group $\text{-OCH}_2\text{-CH}(\text{O})\text{-CH}_2\text{.}$ However, the compounds disclosed in Tokarski do not meet the limitations of the formula recited in instant claims 1, 8, and 23.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (703) 872-9306.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Oct. 25, 2004

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